

## **AMENDMENTS TO THE CLAIMS**

Please amend the claims as follows:

### **LISTING OF CLAIMS:**

Claim 1. (Currently amended) A process for producing canthaxanthin and echinenone, which comprises:

(a) cultivating in an aqueous nutrient medium a recombinant *Xanthophyllomyces dendrorhous* (*Phaffia rhodozyma*) microorganism that comprises a polynucleotide sequence that encodes a  $\beta$ -carotene ketolase, wherein  $\beta$ -carotene ~~which is expressing a  $\beta$ -carotene ketolase gene and belonging to the genus *Xanthophyllomyces* (*Phaffia*) and which accumulates  $\beta$ -carotene in an aqueous nutrient~~ the medium under aerobic conditions, and

(b) isolating the resulted carotenoids from the recombinant microorganism or from the medium, wherein the polynucleotide sequence ~~cells of said recombinant microorganism or from the cultured broth, wherein the  $\beta$ -carotene ketolase gene is originated from a microorganism which is selected from the group consisting of *Agrobacterium aurantiacum*, *Alcaligenes* PC-1, *Paracoccus marcusii* MH1, a gram-negative bacteria E-396 (FERM BP-4283), and *Haematococcus pluvialis* microorganisms of the genera *Agrobacterium*, *Alcaligenes*, *Paracoccus* and *Haematococcus* having the  $\beta$ -carotene ketolase gene.~~

Claim 2. (Currently amended) The process according to claim 1, wherein the recombinant microorganism is derived from *Xanthophyllomyces dendrorhous* (*Phaffia rhodozyma*) ATCC96815, ~~or a mutant thereof.~~

Claim 3. (Cancelled).

Claim 4. (Currently amended) The process according to claim 1, wherein the polynucleotide sequence that encodes the  $\beta$ -carotene ketolase gene is originated from *Alcaligenes* PC-1 ~~or the DNA sequence of the  $\beta$ -carotene ketolase gene is substantially homologous thereto.~~

Claim 5. (Currently amended) The process according to claim 1, wherein the polynucleotide sequence  ~~$\beta$ -carotene ketolase gene~~ is expressed in the recombinant microorganism using a the control sequence sequences.

Claim 6. (Currently amended) The process according to claim 1, wherein the cultivation is carried out at a pH in the range of from 4 to 8 ~~3 to 7~~ and at a temperature in the range of from 15 to 26°C for 24 to 500 hours.

Claim 7. (Currently amended) The process according to claim 6 ~~[[7]]~~, wherein the cultivation is carried out at a pH in the range of from 5 to 7 and at a temperature in the range of from 18 to 22°C for 48 to 350 hours.

Claim 8. (New) The process according to claim 1, wherein the isolated carotenoids comprise canthaxanthin and echinenone.